Comprehensive Local Water Management Plan

Goodhue County Minnesota

2005-2010

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Executive Summary

Introduction:

Goodhue County is located in Southeastern Minnesota, approximately 40 miles southeast of the Twin Cites and 60 miles northwest of Winona. The county seat is located in Red Wing which is the largest city in the County of Goodhue with a population of 15,854. Surrounding counties include; Dakota County to the north, Wabasha County to the south and east, Dodge and Olmsted Counties to the south, and Rice County to the west. The county has an area of 438,454 acres of rural land with an average of 51 people per square mile.

The original Goodhue County Comprehensive Local Water Plan was originally adopted in 1990 after a three year planning process. In 1995 the first revision on the Water Plan started. The revisions were built off the original plan; learning from its successes and failures. Through informational public meetings with citizens of the county and local officials, a list of concerns was derived. The following concerns were addressed: wellhead protection plan development, nutrient management, erosion control, stormwater management, development of county land resources, groundwater protection through land use practices, and improving the GIS database and monitoring strategies. The first revision of the original water plan was then adopted in January of 1998. Several meetings with a "Technical" and "Policy" groups were held to organize the concerns of the public and attempt to act on them. These committees discuss water quality issues, give recommendations and revise goals and objectives when needed. The Priority Concerns Scoping Document contains a list of members on the committees and detailed information on the concerns and how they were derived (appendix).

Purpose:

The purpose of the Local Water Management Plan is to address potential and existing water resource related issues and how they can be protected, sustained and enhanced in Goodhue County. The LWMP follows the requirements of Minn. Stat. 103B.311subd. The following guidelines will be met in this document:

1. The plan must cover the entire county
2. The plan must address problems in the context of watershed units and groundwater systems.
3. The plan must be based upon principals of sound hydrologic management of water, effective environmental protection, and efficient management.
4. The plan must be consistent with local water management plans prepared by counties and watershed management organizations wholly or partially within a single watershed unit or groundwater system.
5. The plan must cover a five or ten year period. We have decided to develop a plan which will address the concerns of the county for the next 5 years (2005 to 2010).

This update is intended to enhance the 1997 revision of the water plan to help protect both the surface water and groundwater of Goodhue County. On June 17th, 1997 Goodhue County delegated the Water Plan to the local Soil and Water Conservation District. Goodhue SWCD thought that their office could better handle the day-to-day operations of

the water plan and ultimately achieve more results. The SWCD was able to take on the responsibility of updating, creating and implementing the plan ever since.
A balance of our natural resources, environmental habits, and growth must be obtained to achieve long term economic and ecological sustainability in the county. Through the implementation of the 4 main priority concerns developed for the 2005-2010 water plan update, a strong effort will be made to achieve said balance. The gathering of both the Technical and Policy Committees will take place at least once a year. This will help the SWCD employees and the committee members to see what objectives were and will be achieved in the future.

Description of Priority Concerns and Summary of Goals

During the developmental process of the plan, the citizens and committee members of the LWMP agreed that erosion control and stormwater issues were of the greatest concerns. Growing cities, outdated structures, increasing impervious surfaces and unsustainable farming practices are just a number of issues that will be addressed.

Erosion Control and Stormwater Quality and Quantity

The geology of some areas in Goodhue County consists of many rolling, steep hills with a wide variety of streams and rivers. In these areas erosion does occur naturally, however with the addition of human influence on the land, i.e. crops, tilling, impervious surfaces, etc, the rate at which erosion occurs increases dramatically. The Policy and Technical Committees thought that this priority concern was worthy of 4 sub categories: General Principles, Urban Stormwater Management, Erosion Control from Rural Devolvement, and Erosion Control from Agriculture. Each addresses the water quality issues for their respected fields. Many agriculture practices prove to be unsuited for this area of the state. Changes are necessary for some farmers to achieve sustainability of land and profit. The concern of stormwater in towns as well as on the landscape can be a powerful force. Managing this issue in both urban and agricultural areas can be difficult but rewarding if retaining and/or treatment can be accomplished.

Goals:

- Provide leadership and staff time to work with cities; developers and landowners to implement environmentally sound storm water management practices during development planning, plat reviews, construction and post-construction activities
- Establish and maintain stream and field vegetative buffers in accordance with existing County Zoning Ordinance which improve water quality.
- Encourage long-term maintenance on detention basins in urban, suburban and highway settings.
- Increase permanent vegetation (native vegetation where possible).
- Provide information and technical or financial assistance to county landowners
- Preserve, enhance and increase wetland resources in the Cannon River and Zumbro River Watersheds.

Estimated Cost: $329,500

Nutrient and Pest Management

Nutrient management plans mainly assist farmers with their agriculture land to achieve the best sustainability between nutrient application and yields. These plans supply farmers with nutrient information on their cropland regarding application rates, residues, awareness of sensitive areas, and application overlapping. Over-applications of fertilizers and other chemicals, both in rural and urban settings, can have a negative effect on water quality. Also, practicing up-to-date plans are very helpful when eligibility for new federal programs become available (Conservation Security Program).

Goals:

- Assist rural and urban landowners in adopting comprehensive nutrient management practices on their lands.
- Provide data layers (nitrate probability, manure applications) in GIS format to local governmental units with jurisdiction over nutrient management.

Estimated Cost: $117,500

Landuse and Natural Areas

The Goodhue County Landuse Department manages the recently updated Comprehensive Landuse Plan. The Comprehensive Plan attempts to maintain the balance between non-agricultural growth and existing land uses. Due to the projected population growth of Goodhue County stringent land use changes will need to be implemented. Urban sprawl has become an issue as it relates to the topography of Goodhue County. New developments, housing units, subdivisions are having their way with the land. Many of these developments are being placed in/near water quality sensitive areas. The need to preserve open space through land use practices in this county is important and is one of Goodhue County's distinct features.

Goals:

- Protect/preserve blufflands and streams through ordinance enforcement and education.
- Develop ground water protection guidelines for areas vulnerable to pollution in order to ensure that surface water entering aquifers via sinkholes, infiltration, or subsurface streams is of high quality**.**
- Encourage open space/corridor management in development plans and improve water quality.

Estimated Cost: $74,500

Feedlots

Goodhue County identifies runoff from feedlots as a priority concern. Feedlots that are not in compliance are seen as a significant problem due to the potential risk of groundwater and surface water quality degradation. Feedlot concerns are typically watershed specific and should target priority areas such as; Karst areas, impaired watersheds, and riparian areas. Low-cost fixes are made available for small feedlots which do not meet state compliance standards along with education and training opportunities.

Goals:

- Provide financial assistance to landowners achieve feedlot compliance.
- Prevent/reduce feedlot runoff. This is watershed specific and should target priority areas such as; impaired watersheds, shoreland, karst and riparian areas.
- Provide adequate local staffing to assist in achieving feedlot compliance.
- Provide technical assistance to all farmers. (Not just those receiving financial assistance.)

Estimated Cost: $438,000

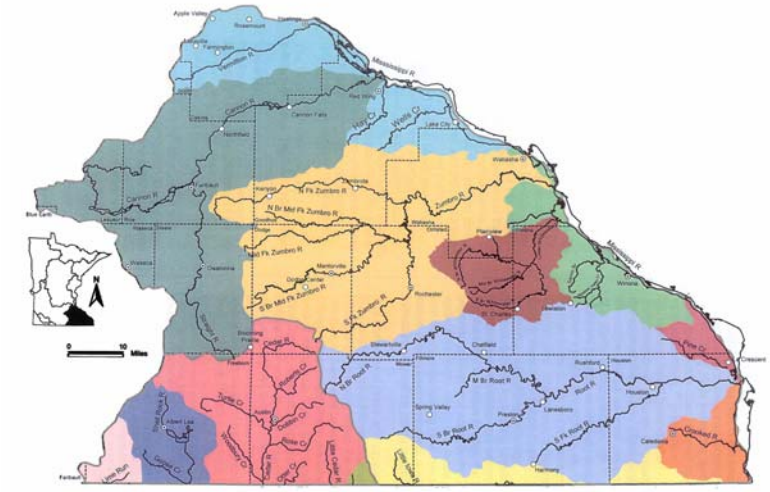
Consistency of Plan

The Water Plan made sure to examine several other water resource organization's documents, suggestions and plans during the updating process. The Plan accounts for the work of many agencies involved in the implementation of goals and objectives. The Goodhue County Comprehensive Plan update was completed 2004 by the Land Use Management Department. The Comprehensive Plan compliments the Comprehensive Local Water Plan directly. Water quality objectives located in the Comprehensive Plan mirror the overall goal of the Water Plan. Besides the local Soil and Water Conservation District and the Land Use Department, the Goodhue County Environmental Health Services, Public Works, GIS Department and Public Health Services are involved with the updating and implementation process of the Plan.

State agencies involved in the plan include the Department of Natural Resources, the Minnesota Pollution Control Agency and the Board of Water and Soil Resources.
As a regional effort, the Southeast Minnesota Water Resources Board undertakes the challenge of improving the overall water quality of the SE 10 counties. Lead by Bea Hoffman, the Board is made up of County Commissioners from each of the ten counties with water quality interests' in-mind. The Board exists to help sustain the quality of life in the ten counties of southeastern Minnesota by improving and protecting the water resources through coordination of local water planning efforts.

Many non-profit organizations have been assembled over the past 15 years in Goodhue County and Southeast Minnesota, all striving to enhance the water quality of the area. A few of them are listed below:

BALMM – Basin Alliance for the Lower Mississippi in Minnesota, plan developed in 1997. This organization is comprised of 10 counties in the SE which continue to pursue the common goal of improving the water quality of the region.
Cannon River Watershed Partnership – organized in 1991, since then CRWP has completed many water quality enhancement projects in the County and continues to take steps in improving water quality. A Watershed Plan was developed in 1996 to address goals watershed wide. The plan is to be updated in 2005.
Zumbro River Watershed – currently developing a watershed organization
Vermillion River Watershed – currently drafting a watershed plan
Wells Creek Watershed
Bear Valley Watershed District
Belle Creek Watershed District
(See watershed maps in appendix for locations of watersheds and contacts)



Although the SWCD is the delegated authority to develop and implement the County's Water Plan, the listed agencies above have a critical role in updating the plan. Without access to their research and ideas, as well as all the members on the Technical and Policy Committee this update would not be possible.

Recommendation of Amendments to other plans

Wetland Conservation Act –increased penalties for violations occurring in wetlands. Current fines and Restoration Orders do not always outweigh the cost/benefit for specific wetlands that are drained/filled/excavated. Also, streamlining wetland preservation/restoration process is needed. Many landowners are discouraged to enroll or participate in wetland preservation program due to the extensive timely paperwork process.

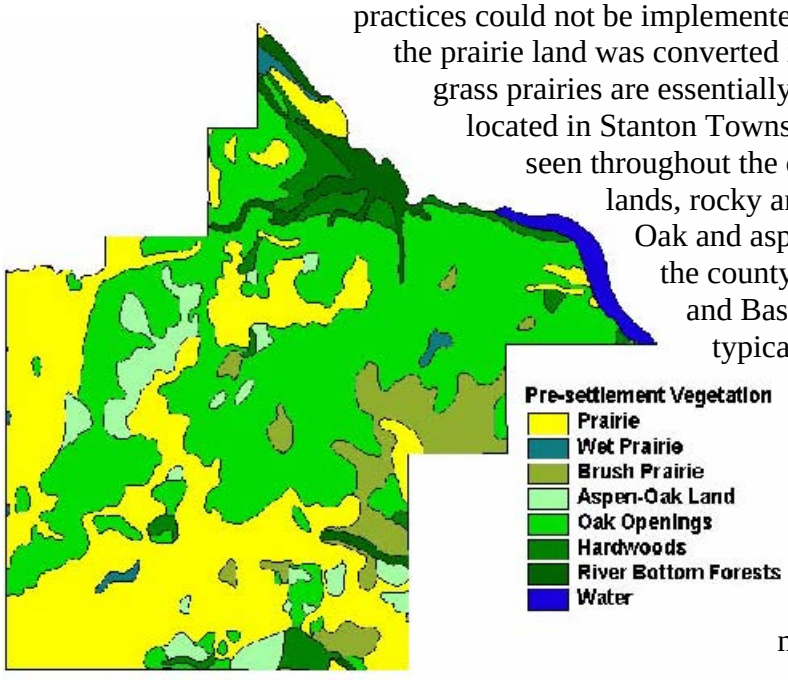
Assessment of Priority Concerns

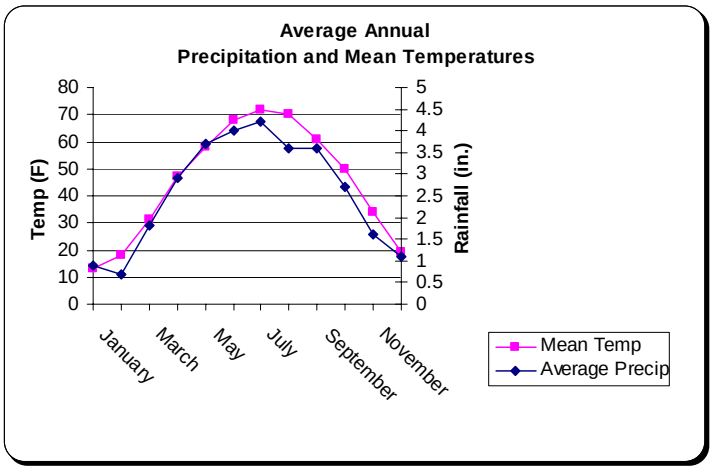
The priority concerns of the residences and committee members have been well documented throughout the updating process. The history and descriptions of the concerns will be discussed in detail during this segment of the plan as they relate to ground and surface water resources. The Priority Concern Scoping Document can be found in is entirety in the appendix.

Goodhue County's topography is comprised of mostly gently rolling prairie, but it changes to a deeply incised bluff contour along streams and rivers, especially towards the Mississippi. Elevations throughout the county vary from 1,250 feet at Kenyon to 665 feet at Lake Pepin. The chief tributary streams of the Mississippi River in this county include: the Cannon River with its southern arm the Little Cannon; Prairie Creek, and Belle Creek; and the North Fork, North Branch and Middle Branch of the Zumbro River. Spring, Hay, Bullard's, and Wells Creeks, are not large streams, but are important features in forming the topography of the county and empty directly into the Mississippi. Besides these streams, the Vermillion River, to the north, separates Prairie Island from the main land of Goodhue County.

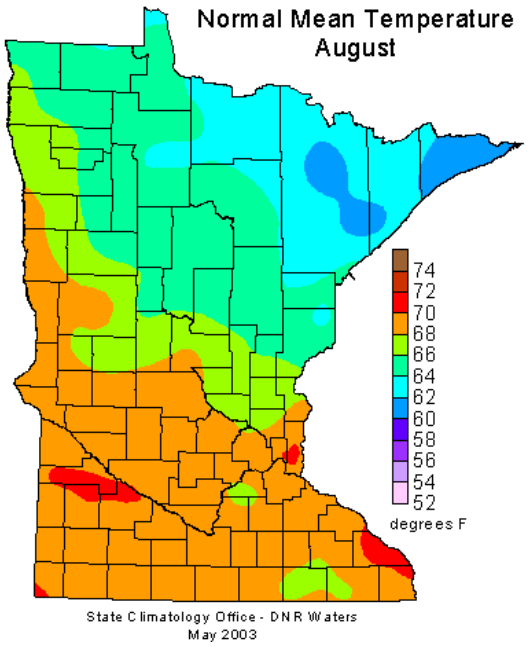
Pre-settlement Vegetation

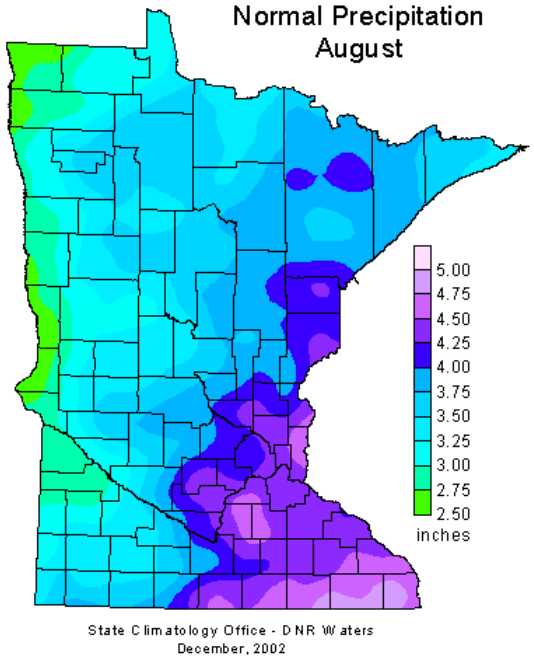
The original vegetation of Goodhue County consisted of native prairies, oak savannas, deciduous forests and emergent marshes. As of the early 1990's, only about 7% of those natural communities still exists in Goodhue County. That 7% is mainly located in areas where farming practices could not be implemented (too wet, steep slopes, etc.). Almost all the prairie land was converted into cropland or pasture. The original tall grass prairies are essentially gone except for one small 40 acre tract located in Stanton Township. However, dry prairies can still be seen throughout the county. These prairies develop on bluff lands, rocky and sand grounds located on glacial till. Oak and aspen are found in abundance throughout the county in small groupings. Cottonwood, Maple, and Basswood trees can be found in moist soils, typically located near streams, ravines and water ways. Extensive rural development the past quarter century has lead to decreased populations of many of these tree species. The removal of these trees also degrades soil stability and wildlife natural corridors which are much needed for a variety of game and non-game species.



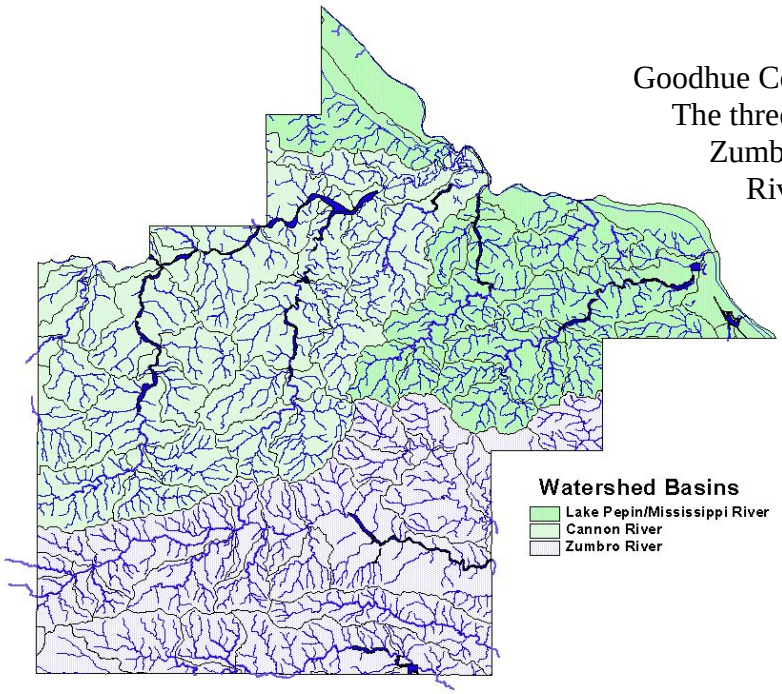


Goodhue County has an average annual precipitation that is approximately 30.8 inches. Goodhue County receives just a few more inches of rain a year compared to the western counties of the state. The annual mean temperature for Goodhue County is 45.1 degrees Fahrenheit which stays fairly consistent throughout the southern portions of the state. The small change in precipitation across the state has a large impact on the topography, land use and plant and animal diversity. For instance, a minor change in soil temperature (1/2 degree) can have serious implications on what that land can sustain. In recent years snowfalls have been minimal in the winter months. With less snow cover, comes less flooding potential in spring months. Streams can come out of their banks and erode the surrounding sandy soils very easily in spring months. This is mainly due to the nature of the land and its drainage style, but human influence has played a large factor in this equation as well.





These maps of Minnesota show a normal range of precipitation and temperature over the state in the month of August. Notice the amount of rainfall in Goodhue County (4.50 in) while the western portions of the state are approximately 2.50. in.



Goodhue County is comprised of 3 major watersheds. The three major watersheds are the Cannon River, Zumbro River, and the Lake Pepin/Mississippi River Watershed (left). These watersheds encompass many minor watersheds that are defined throughout the county. Here water flows to the lowest portion of the basins and then moves to a larger basin. In the southeast area of the state, drainage ways are typically in the form of waterways, streams or rivers and land use plays the most important role on their quality

Within the watersheds listed above, Goodhue County has over 20 rivers and streams with seemingly endless tributaries and just 2 lakes. Lake Byllesby (which is a reservoir) and Lake Pepin, both located with in a riverine system. Lake Pepin is by far the larger of the two which is located on the Mississippi River near Frontenac and Lake City.

The concerns that the assessments will focus on are as follows: Erosion Control and Stormwater Quality and Quantity, Land Use and Natural Areas, Nutrient and Pest Management, and Feedlots. Each concern is described in depth in this priority concern assessment section as they relate to surface and groundwater quality of Goodhue County.

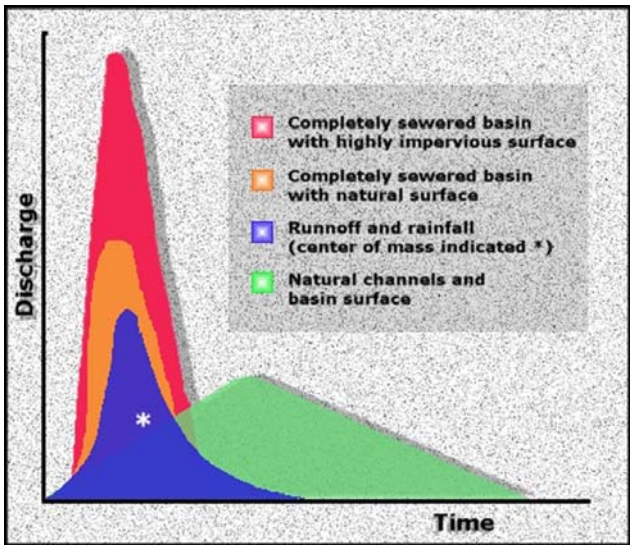
Erosion Control and Stormwater Quality and Quantity

This plan must address the existing problems as well as future issues as they relate to stormwater. Stormwater includes agriculture land along with urban land usage which concentrates on both water quality and quantity. Erosion and sedimentation are the main ingredients that degrade streams, wetlands, ponds, and rivers. When soil particles become dislodged and mobile, elements such as phosphorous also become mobile and enter our streams. Soil particles become dislodged by numerous ways, including removal of cover vegetation, loss of topsoil, tillage, construction activities, high flow events, etc. Many streams, rivers, and lakes are currently being degraded by erosion and sedimentation mainly due to the lack of stormwater control structures and/or treatment on agriculture land as well as urban areas.

Urban Stormwater Management

For most of the cities in Goodhue County, stormwater treatment is nonexistent or unequipped to control stormwater during moderate or high flow events. Increased development and increased impervious surfaces, throughout the county, have resulted in increased stormwater runoff rates and volumes. Impervious surfaces include roof tops, parking lots, buildings, roads, piping, etc. which do not allow infiltration of water. Studies have consistently shown that during storm events, pollutant loads are directly related to a watershed's imperviousness. For an example, a typical urban city block (with rooftops, driveways, roads, etc) generates 9 times more runoff than a wooded or undisturbed area of the same size.

This hydrograph shows a typical rainfall event and how human influence affects the rate and amount of stormwater runoff. The steepness of the red slope is directly related to the increased amounts of impervious surfaces and hydrologic disruption. The green area of the graph shows a natural hydrograph pattern before human influence. This area can retain more water then a sewered community does over time. Natural storage capacity, in the form of infiltration and wetlands, assist in this holding process.



The reduction in water storage capacity in the county has clearly led to increased stormwater rates. Wetlands in the county have been reduced to less than 50% which were originally present in the area. Wetlands act as a sponge for surface runoff pollutants. In addition wetlands are very important to help regulate water infiltration. With the reduction in these filter areas, only limited amounts of water have a chance to infiltrate into the groundwater, resulting in water traveling across the surface carrying sediment and pollutants. This picture on the right shows the amount of debris, sediment and garbage that can enter

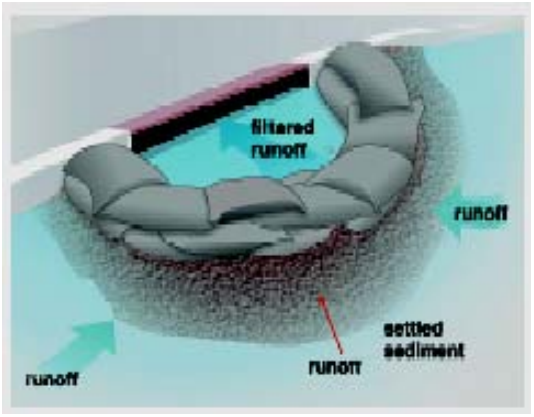
catch basins. Any given town or city can have hundreds to thousands of these inlets to disperse stormwater as quickly and efficiently as possible. The receiving bodies of this stormwater are typically streams lakes and rivers. Major stream degradation, can occur at relatively low levels of imperviousness (10-20%). Some examples of degradation are; damaging stream bank vegetation, extremely high velocities and volumes, channel widening, increased temperatures, and sediment loads. Increased stormwater temperatures have negative effects on fish communities in the receiving water bodies, especially the sensitive trout species which we have in many of our streams in Goodhue County. The picture on the right shows an urban stormwater receiving stream cut-bank after a storm event. Notice little hydrology is present in this once babbling brook stream. The morphology of the stream bed is constantly being changed in these conditions.

The Minnesota Pollution Control Agency (MPCA) regulates erosion control concerns through its National Pollution Discharge Elimination System (NPEDS). NPDES permits establish specific limits and requirements to protect Minnesota's surface and ground water quality for a variety of uses, including drinking water, fishing and recreation. Other activities which the NPDES permits regulate are; industrial process wastewater, contact and non-contact cooling water, storm water, contaminated ground water pumpouts, water supply treatment backwash and wastewater treatment sludges. Recently the MPCA put into affect a one acre or more size limit which requires a NPDES permit. This says that any construction activity which will affect one acre or more of land/soil, a NPDES permit will be needed. This insures that the proper erosion control measures are taken to minimize the amount of sediment and other pollutants leaving the site. Implementing a one acre limit, several more permits will be issued on a regular basis, and will need to be enforced and inspected in the future.

During construction events, and shortly after, land can become highly susceptible to erosion and sedimentation. Best Management Practices (BMPs), when installed properly, can effectively reduce the amounts of erosion and sedimentation near construction sites. Erosion control practices are designed to slow water and soil from precipitation events through products like mulch, fiber blankets, hydro-seeding, ground covers, etc. Sediment controls include practices like installing silt fences, straw bale dams, sedimentation ponds, etc. which all help capture soil particles which are trying to move away from the site.

The photograph on the left portrays a construction site with a failing erosion control structure. With no cover or vegetation on the freshly exposed soil, water and sediment is able to move freely over the surface. The photo on the right shows the same site after a minor rain event; the site was seeded and covered and nearly all erosion issues were solved. (This construction site was located just outside of Goodhue, MN)

BMPs must account for the surroundings of the project site. Keeping parameters such as; soil types, slopes, size of drainage area, land use in the area, area of flow concentration, and distance to the receiving body of water, etc. in mind, will help reduce the amount of erosion from construction sites.



Any county, town, township, private company or development community can implement practices to help reduce the amount of impervious surfaces and water retention in their local basins.
Sediment, phosphorous, oil, heavy metals and other pollutants can be removed when stormwater is retained with retention ponds, sediment basins, buffer strips, wetlands and numerous other practices. These structures not only help filter pollutants, but also help increase groundwater infiltration. The picture to the left shows a community which implemented the use of rain gardens. The community is not newly developed, but a few decades old.

This is proof that rain gardens are not limited to newly developed areas. The most recent, undocumented, studies show that the amount of phosphorous which these infiltration basins capture is in the 80% range. They collect the dust and sediment bound phosphorous from the first few minutes of the storm, and decreases the volume of stormwater which enters catch basins. Notice the narrowness of the road which is cause for less imperviousness.

Practices such as using pervious surfaces for parking lots and driveways (photo on right) also helps decrease the volume of water leaving a site. The parking lot picture below uses a type of infiltration basin throughout the lot. This method forms the curb and gutters to drain runoff into an infiltration area and not directly into a stormwater pipe. Other BMPs and ideas related to runoff are located in the appendix.

Agriculture Erosion Control

The conversion of land from pre-settlement conditions to current agriculture practices and urbanization has affected water drainage many ways. Prior to current agriculture uses, Goodhue County consisted of primarily rolling hills of prairie grasses, and clumps of hardwood forests located near steep slopes and streams. That type of pre-settlement vegetation helped hold soil and also retain and absorb water naturally at high rates.

When conventional agriculture practices began in the early 1900's, runoff rates increased as perennial vegetation was removed and replaced with seasonal crops. This practice leaves bare, uncovered ground for half of the year, resulting in extremely high runoff rates, especially on steep sloped areas during storm events. Presently, non-point source pollution is the leading cause of impairments on surveyed waters. This pollution is caused by agricultural activities such as plowing, spraying pesticides, confined animal feedlots, fertilizing and even planting and harvesting. As seen in the picture above, gullies form easily on agricultural land if no cover crops are present. That picture was taken during a moderate spring rainfall on 2 to 6 percent slopes where little or no vegetation was present to help hold the soil in place. The runoff from fields contains items such as sediment, nutrients, pathogens, pesticides, and salts. Like urban runoff, these items cause; sedimentation in water, which reduces the amount of sunlight reaching aquatic plants and may kill many species of fish. Also agricultural activities have a negative impact on stream habitat and stream channels when methods of controlling non-point source pollution are not taken.

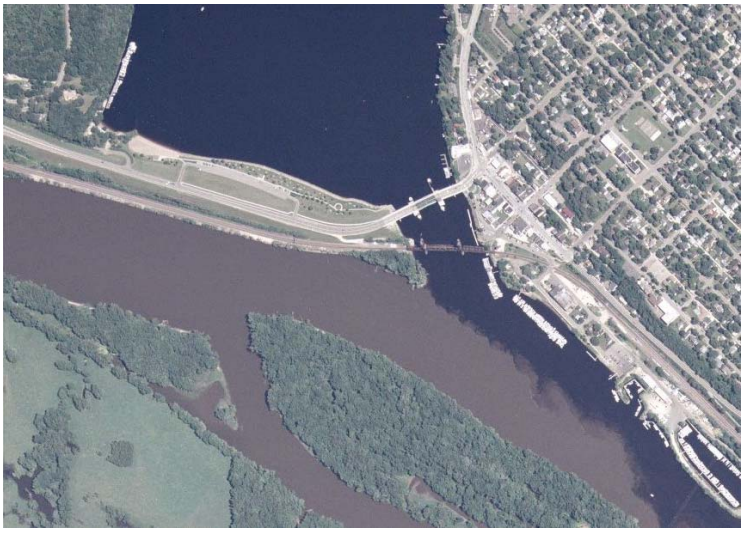
Moldboard plowing was a standard practice up until the last few decades. Occasionally farmers use these plows when complete crop residue incorporation is desired. After moldboard plowing takes place, soils are highly susceptible to wind and water erosion.

Goodhue County's agricultural background has been and will continue to be an economic strong hold, but conservation practices will have to be implemented in order to achieve sustainable yields in the future. A variety of BMP's are available to help control erosion of agriculture land.

BMPs for agriculture land include; contour farming, buffers, no-till farming, cover crops, grassed waterways, terraces, etc. These practices help stabilize soils, prevent/reduce erosion.

Implementing the used of cover crops, seen here, can increase stabilization of the soil throughout fall, winter, and spring storm events. A cover crop seeding, post harvest of canning crops, is very effective to stabilize soils.

Sedimentation can seem like an invisible enemy during times of low flows. But it only takes a picture like the one shown here to remind us of what is going on even during moderate flows. The Mississippi River drainage basin is dominated by farming practices. That fact along with the naturally erosive land surrounding the Minnesota River contributes to the sediment load that the Mississippi carries. The St. Croix drainage area has much less farm land, less erosive soils and not near as extensive development taking place.

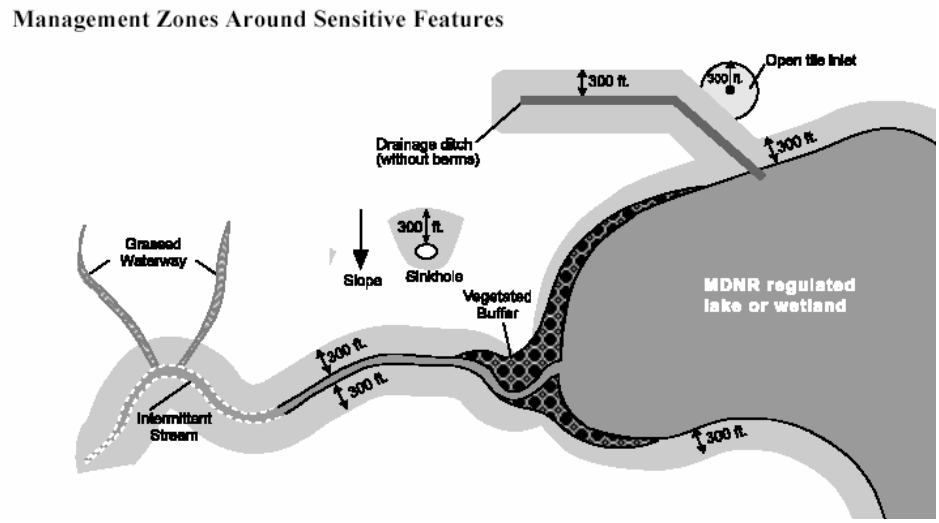


This picture shows the St. Croix River flowing into the Mississippi River at Prescot, WI near Hastings. Notice the sediment load the Mississippi carries compared to the St. Croix.

Nutrient and Pest Management

Nutrient Management involves a variety of inputs that strive to achieve one common goal, to minimize off-site movement of nutrients and pathogens. This management practice should include farmers as well as homeowners. The base and most important attribute to Nutrient Management is education. Educating farmers on the quality and quantity of nutrients in their fields, and nutrient application rates is a start.

Elements such as nitrogen, phosphorous and potassium are generally the main ingredients of fertilizers. Nitrogen is water soluble and is able to move through the water table freely and phosphorous is able to attach to soil particles. When they are applied in excess of plant needs, nutrients can wash into aquatic ecosystems where they can cause excessive plant growth, which reduces swimming and boating opportunities, creates a foul taste and odor in drinking water, and kills fish. In drinking water, high concentrations of nitrate can cause methemoglobinemia, a potentially fatal disease in infants also known as blue baby syndrome. This understanding must be taken into account when developing steps to better water quality.



In agricultural settings the MPCA regulates the application and setbacks for a variety of land-applied nutrients. These setbacks (above) provide a buffer between areas that are more susceptible to contaminates than others. If these set backs are practiced, farmers have the opportunity to land apply nutrients to their fields with limited negative effects on surrounding water quality sensitive features. Over applying fertilizers to crop land has been an ongoing issue in the agriculture community over the past 30 years. Knowing what nutrients are available in the soil and the amount of nutrients crops need to produce high-quality yields is important information to obtain prior to application. Farmers can implement nutrient management plans which help maintain high yields and save money on the use of fertilizers while reducing non-point source pollution.

Setback areas can become excellent filter strips and wildlife corridors. Cost sharing is often available for these practices.

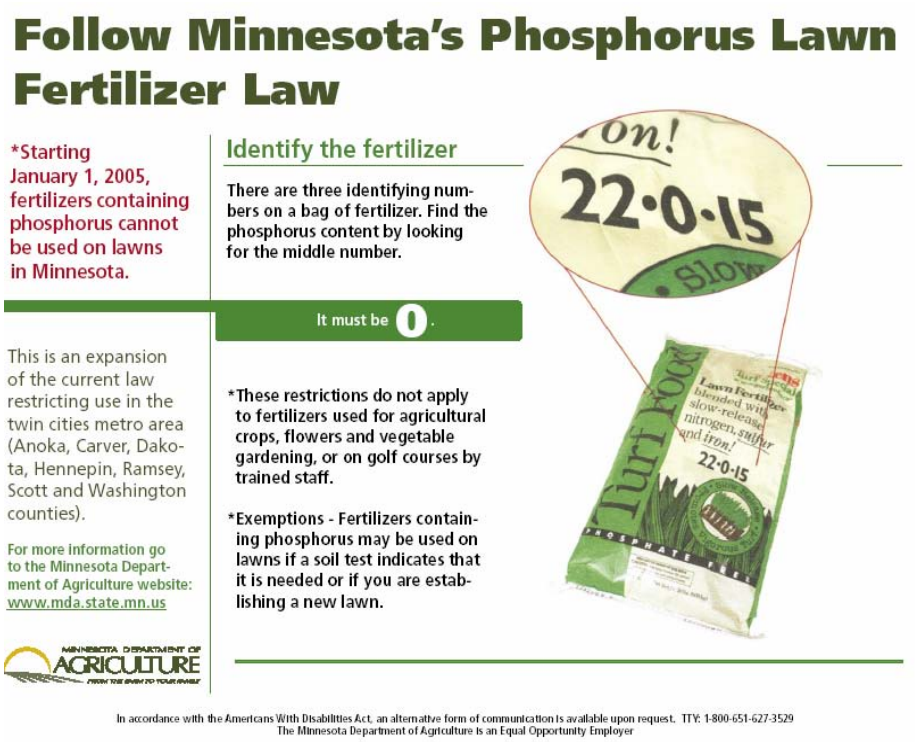
Nutrient management plans take into affect the inputs and outputs of a given farmers field or series of fields. The plans are ongoing tools which help minimize the nutrient inputs a given field needs while still attaining desirable yields. Nutrient management plans utilize information like soil type, crop rotation, crop residue, commercial fertilizer and manure nutrient content. These inputs allow farmers to maximize their production while minimizing their commercial input costs. Also, keeping an up to date nutrient management plan will better a farmers chances of being enrolled in the Conservation Security Program (CSP) when it becomes available. CSP is a program which falls under the 2002 Farm Bill. It will reward farmers which have been practicing conservation agriculture in the past.

Instead of fall application of anhydrous ammonia this farmer is applying in the spring, just before planting. Many studies have shown that the loss of N over the winter out ways the costs/benefits of applying in the fall.

Both in urban and rural settings, pesticides and herbicides are used to control the growth of weeds and fungus. These chemicals can enter and contaminate water through direct application and runoff events. They can kill fish, poison food sources, and harm wildlife habitat. Integrated Pest Management (IPM) can reduce non-point source pollution from these chemicals. IPM uses techniques based on soils types, weed or pest history, and crop for a particular field. IPM can limit the use of pesticide and herbicides on a field through variety of practices including biological methods.

Recent technologic advances in farm practices can prove to be a conservation method in itself. Technology such as GPS and real-time yield monitors on harvesters allow farmers to get a better understanding of the limits of their fields. Data such as yields, moisture content, soil characteristics, etc. is downloaded into a GPS which then can control a variety of devices, such as; planters, sprayers, harvesters and even tillage equipment. Knowing this information can reduce farmers overall cost of inputs by limiting herbicide/pesticide application, nutrient application and planting rates just for starters.

This photo shows a farmer using a GPS along with the previous seasons yield data to help minimize his planting costs.



In urban areas nutrient management is also an issue. Pet waste, vehicle chemicals, lawn fertilizer and the abundance of leaf litter can be detrimental to surrounding water bodies. Gutters and storm sewers act as a highway for the pollutants to reach a water body as fast as possible. This debris and waste contains high levels of phosphorous which over load surrounding water bodies with nutrients. The abundance of phosphorous in most urban settings and the clear effects of what phosphorous can do to receiving water bodies lead to the "no phosphorous" fertilizer law was created in 2004. This law prohibits the sale and application of lawn fertilizers which contain phosphorous starting January 1st, 2005.

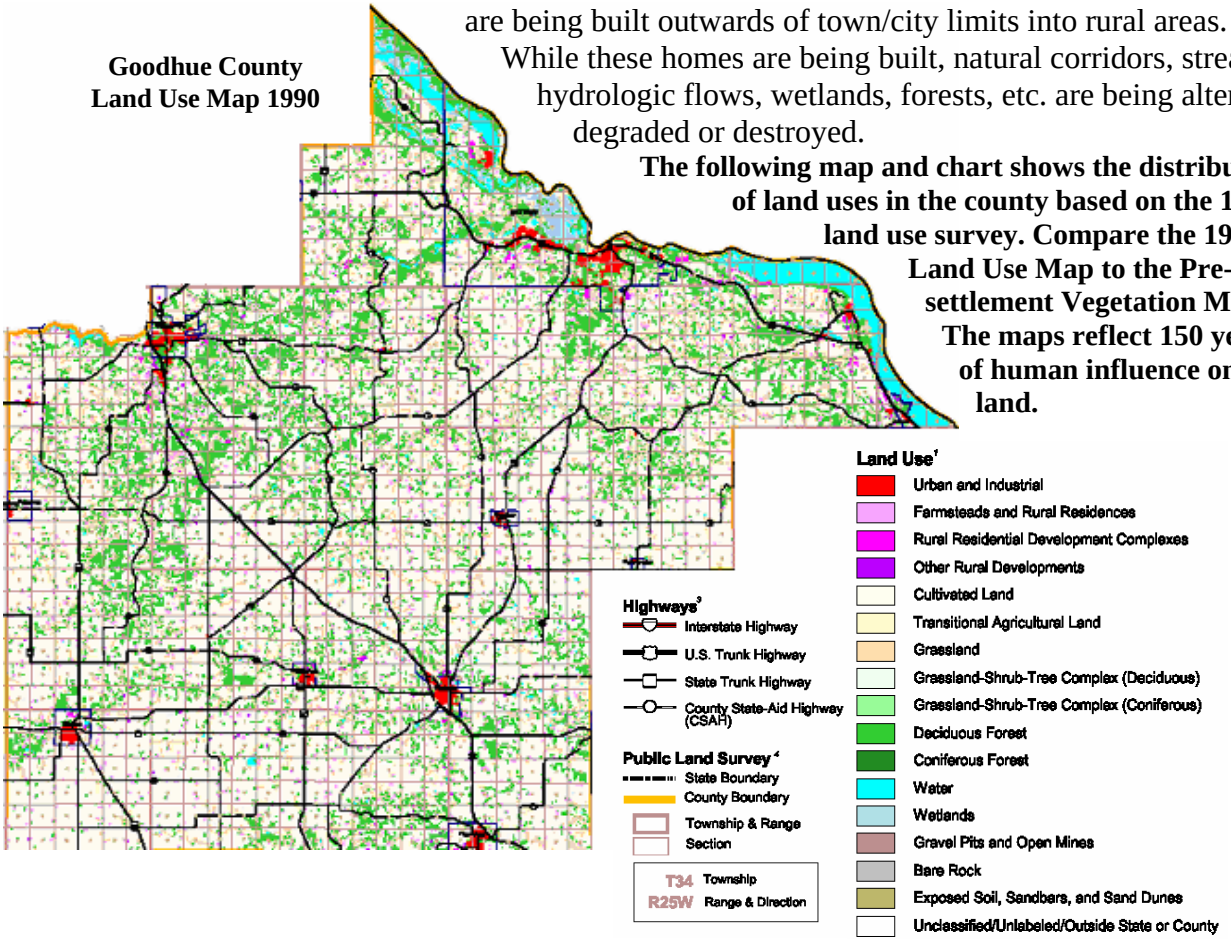
Landuse and Natural Areas

Goodhue County Land Use is managed through its Comprehensive Plan and related ordinances. The Comprehensive Plan was recently updated in 2004. The plan references the Local Water Plan on sensitive developmental and land use issues like; Decorah edge areas, bluff land areas, rare and endangered natural resource sites, wetlands, streams, etc. Based on the 1990 landuse survey of Goodhue County, cultivated agriculture land is the greatest use of the land. Even though the 1990 land use survey is almost 15 years old, it still portrays the activity in the county well. The majority of the uses haven't changed much except for rural residents and urban area may have increased, while some agricultural land has decreased. Developments in rural areas and expanding towns/cities are the biggest contributors of that trend.

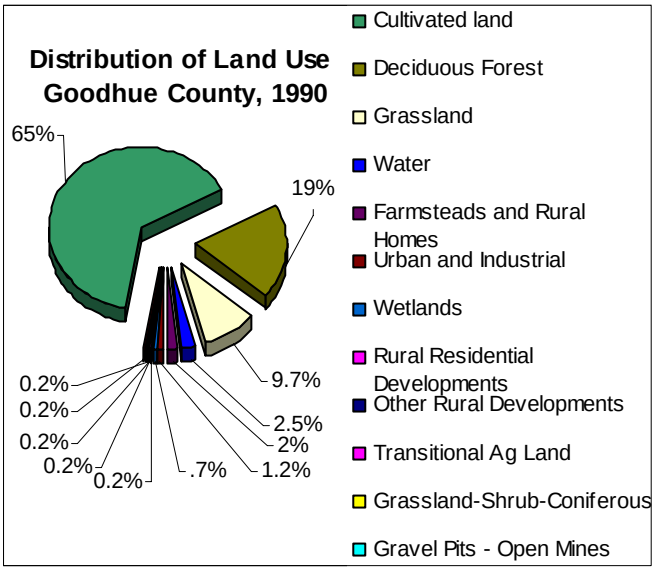
New homes are being built in southeast Minnesota at a rate which almost mirrors the baby boom era. This can be attributed to low finance incentives on new homes and low interest rates. Homes are being built outwards of town/city limits into rural areas. While these homes are being built, natural corridors, streams, hydrologic flows, wetlands, forests, etc. are being altered, degraded or destroyed.

Goodhue County Land Use Map 1990

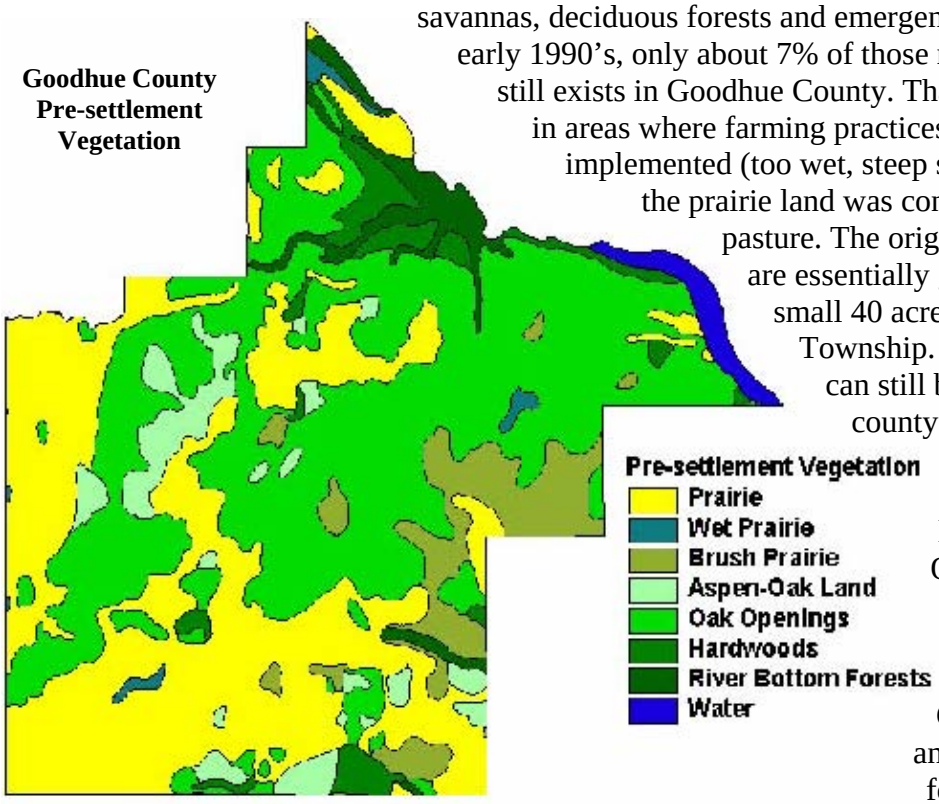
The following map and chart shows the distribution of land uses in the county based on the 1990 land use survey. Compare the 1990 Land Use Map to the Pre-settlement Vegetation Map. The maps reflect 150 years of human influence on the land.



Even though Goodhue County uses 65% of it land for agriculture; only one county drainage ditch exists, which is located in the southwest portion of Kenyon Township, and one judicial ditch located in the northern portion of Cannon Falls Township. This is due to the nature of the soils, topography and geology of Goodhue County which allows water to runoff and/or percolate easier as opposed to other parts of the state. This is discussed further in the background of the county portion of the water plan.



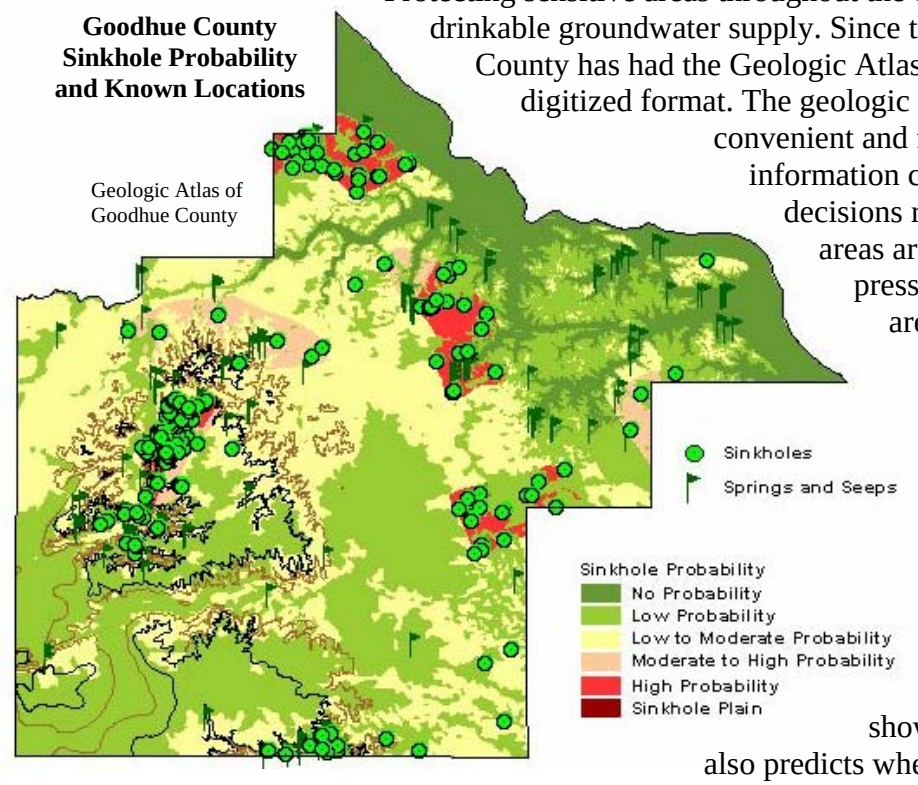
The original vegetation of Goodhue County consisted of native prairies, oak savannas, deciduous forests and emergent marshes. As of the early 1990's, only about 7% of those natural communities still exists in Goodhue County. That 7% is mainly located in areas where farming practices could not be implemented (too wet, steep slopes, etc.). Almost all the prairie land was converted into cropland or pasture. The original tall grass prairies are essentially gone except for one small 40 acre tract located in Stanton Township. However, dry prairies can still be seen throughout the county. These prairies develop on bluff lands, rocky and sand grounds located on glacial till. Oak and aspen are found in abundance throughout the county in small groupings. Cottonwood, maple, and basswood can be found in moist soils, typically located near streams, ravines and water ways. Extensive rural development the past quarter century has lead to decreased populations of these tree species as well as other plant communities. The removal of these trees also degrades wildlife natural corridors which are much needed for a variety of game and non-game species.



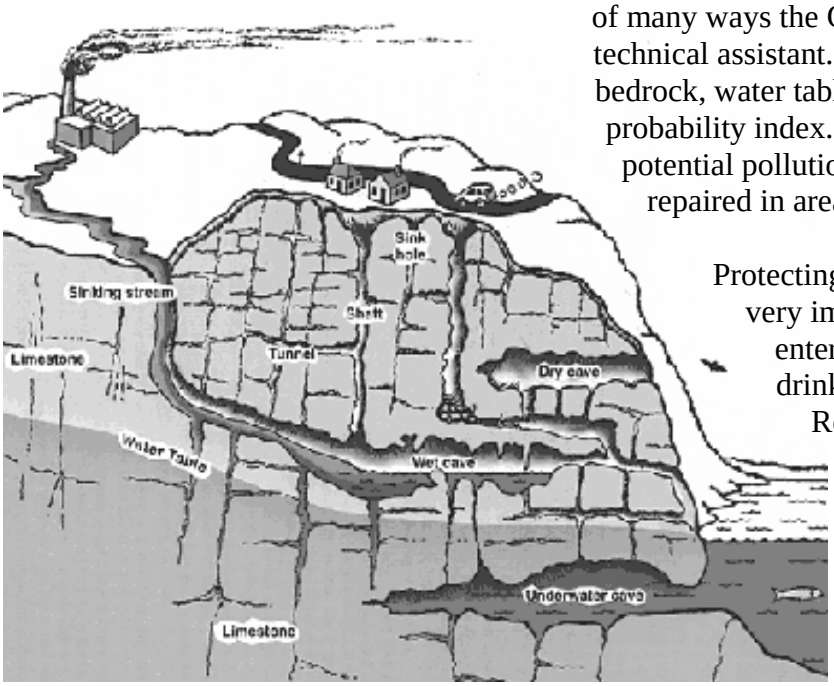
Almost every human activity, transportation, farming, land use, recreation, etc. in a watershed affects the water quality in some way or another.
State Highway 52, which cuts diagonal from the northwest to the southeast portion of the county, is acting as a corridor for recent development. Goodhue County is centrally located between the Twin Cities Metro Area and Rochester (a rapidly growing city). The mentality of people in the

1990's to the present has changed greatly from years past. Trends show that the willingness of people to travel over 50 miles to work, one way, is now worth it to live in a quiet rural setting. This attitude has had major implications on Goodhue County and its development. Whether it is the population increase or the vast number of housing developments being constructed, Goodhue County has been going under many severe alterations. Regulating development areas will help preserve our natural resources in the county. Natural resources including, but not limited to, wetlands, streams/rivers, forests, Decorah edge, and rare and endangered species will need to be protected or enhanced.

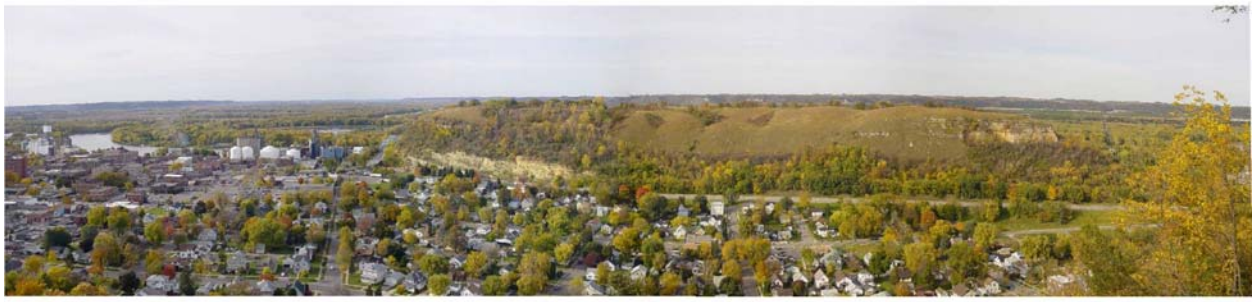
Goodhue County Sinkhole Probability and Known Locations



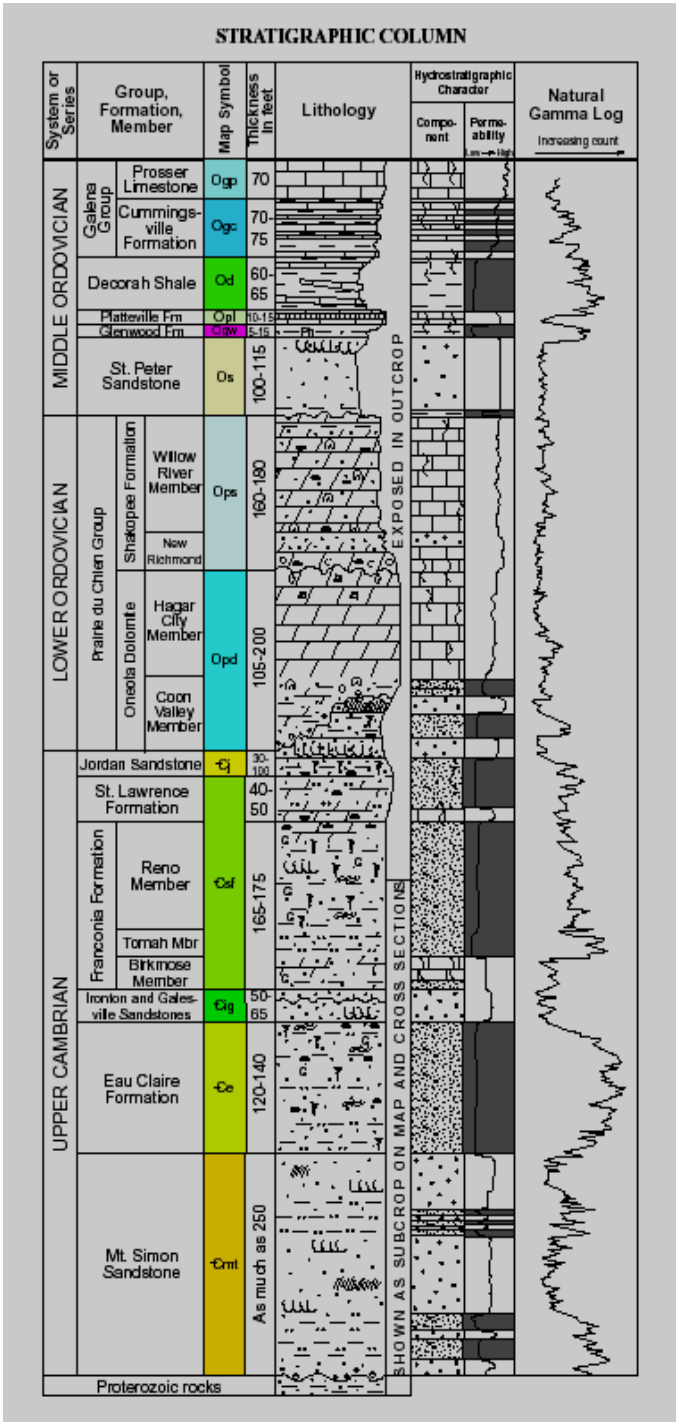
Protecting sensitive areas throughout the county is necessary to maintain a drinkable groundwater supply. Since the 1997 water plan update, Goodhue County has had the Geologic Atlas updated, completed, and put into a digitized format. The geologic atlas in this format is much more convenient and feasible than past forms. This information can be used when making land use decisions regarding sensitive areas. Sensitive areas are undergoing developmental pressures in Goodhue County. Sensitive areas have distinctive features which make them more susceptible areas of groundwater and surface water pollution. The characteristics of Karst topography in Southeast Minnesota are extremely susceptible to pollution. Sink holes and disappearing streams are two locations where surface water can become ground water in an instant. This map of Goodhue County shows the known sinkhole sites, and also predicts where others could be. This map is one of many ways the Geologic Atlas can be utilized as a technical assistant. It combined data layers such as depth to bedrock, water table depth, etc. to come up with this probability index. Failing septics, feedlots and other potential pollution sources should be identified and repaired in areas where Karst features are probable.



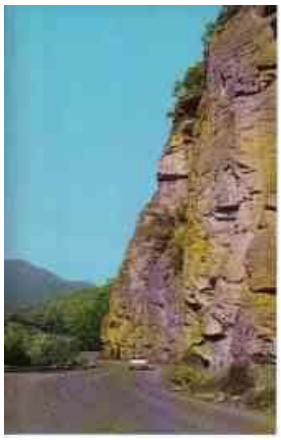
Protecting the land surrounding these features is very important because pollutants can easily enter the ground water and ultimately our drinking water supply as seen in this diagram. Regulating setbacks, buffers, and landuse in Karst areas can potentially help reduce or eliminate pollutants entering these systems.



Bluff lands, which is land comprised of slopes of 35% grade or higher, can be very unstable and dangerous when vegetation is removed or if developments infringe on these areas. Pressures from some dwellings can cause instability to the toe or bottom of the bluff and cause slumping.



The photograph above shows Barn Bluff towering over 200 feet above the city of Red Wing. Looking to the east from atop Memorial Park, the Mississippi River can also be seen flowing behind Barn Bluff in this picture. Bluffs are found mainly on the northern and eastern portions of Goodhue County. The obvious and most pronounced bluffs can be found along the Mississippi River Valley. Areas like these are highly sought after for their beauty, scenic views and wildlife habitat. These areas should be preserved and protected whenever possible.



The Goodhue County Geologic Atlas, along with many other things, can show bedrock geology. Having this information available can help with decision making when groundwater quality and quality is an issue. For more visuals on the geology of Goodhue County, a complete version of the Geologic Atlas is available at the SWCD office in Goodhue.

The Nation Resource Inventory study was completed in June of 2001 for Goodhue County. The NRI is an assessment of the County's natural areas. It contains information

on the major landforms and natural communities within the county, management strategies for these natural communities, natural resource policy recommendations, and community descriptions for each of the watersheds. It also contains a detailed community survey for each site inventoried during the project. The community survey lists what type of land cover exists and specifically what type/s of vegetation exists. There is also a rank given to each site that represents the quality of the existing vegetation.

All this is information is available for anyone to use and should definitely be utilized when making land use decisions throughout the county. The entire NRI is available on line at the Goodhue County website and many geologic atlas maps and diagrams are included throughout this update document.

Feedlots

During the original water planning process in 1990 only 48 feedlots were permitted by the MPCA. As of June 2004 1036 feedlots are registered in Goodhue County (See Appendix for Feedlot map). Steve Schmidt is Goodhue County SWCD's current Feedlot Officer who administers the County Feedlot Program. The County feedlot program is a cooperative arrangement between the MPCA and county government to administer Minnesota's feedlot rule. County feedlot programs are responsible for the implementation of feedlot rules and regulations in 55 Minnesota counties. Mr. Schmidt has been active in notifying feedlot owners of training sessions and latest feedlot concepts in the area. This has been done by conducting informational meetings, newsletters/direct mailings sent to feedlot owners and feedlot articles placed in local newspapers, all striving to achieve feedlot compliance.

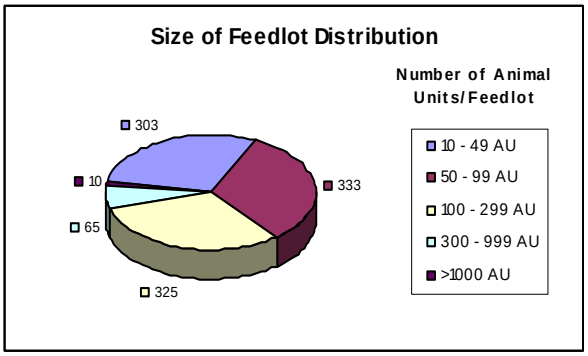


Chart shows the size distribution of the 1036 feedlots in Goodhue County as of June 2004.

In 2004, 84 Open Lot Agreements (OLA) were signed, which currently gives Goodhue County a total of 385. The Open Lot provision in Minnesota's feedlot rule offers a gradual and flexible approach for smaller feedlots to reduce manure-contaminated runoff into waters of the state. The agreement is only for smaller scaled feedlots, less than 300 animal units. The OLA helps feedlot owners to achieve compliance through a flexible, cost effective method.

Land application of waste or over application of fertilizers, pesticides manure etc. are potential sources of non-point source pollution to groundwater as well as surface water. Enforcing the day to day operations of application practices is difficult, thus technical assistance and education are becoming more successful components to protect the environment. To protect water quality and meet state rules pollutants in runoff must be reduced to safe levels before entering streams, rivers and lakes.

FLEVAL, a feedlot evaluation model is a tool that takes a "fixing" approach to achieve feedlot compliance. It can predict phosphorous runoff (as well as other pollutants) concentrations at a feedlot's discharge point. This is done by collecting information like; size of lot, % of paved areas, areas of rooftops, number/type of livestock, surrounding vegetation, typical storm events, soil types, topography, etc. That information is then entered into a FLEVAL data entry. It processes the information and presents a series of options. Options like reducing paved areas, redirecting flows, limit

animal units, increasing actual feedlot size, create buffer strips, set-backs, fencing, etc. Most options are low cost and can be very effective if maintained. Here are a few examples of FLEVAL being used in feedlot fixes.

Before

After

Vegetation has not been established in the after photo. The vegetation consists of various buffer seedlings. This buffer is fenced off from cattle and will help treat the feedlot runoff once established. Photos: MPCA Website

Before

After

This fix was more expensive than the majority of FLEVAL feedlot fixes. The project above eliminated almost all animal waste runoff. This was done by installing grated cement slabs which allowed waste to seep through and be collected in underground storage tanks. Photos: Goodhue County SWCD

Continued education on feedlot runoff, implementing BMP's, and enforcement will be needed for feedlot owners to achieve compliance. Achieving feedlot compliance is a major concern due to the immediate potential for surface water and groundwater degradation. For instance; high permeable soils tend to leach waste very easily, contamination of aquifers and drinking water via abandoned or unsealed wells, contamination of groundwater by surface water recharge. Surface water on feedlots includes open ditches, earthen lagoons, open lot runoff, etc. which all can contribute to groundwater contamination.

Priority Concerns Objectives and Goals

Erosion Control and Storm Water Quality and Quantity

Objective 1: Provide leadership and staff time to work with cities; developers and landowners to implement environmentally sound storm water management practices during development planning, plat reviews, construction and post-construction activities.

Action 1: Provide information concerning county wide stormwater guidelines to township leaders, county building officials and county/city public works personnel;

- Provide educational opportunities for LGUs to learn more about erosion and sediment control regulations and techniques available from the MPCA and MECA. Attend at least one erosion control conference per year and relay that information to at least 2 townships or cities.
- Promote countywide erosion control plan review and inspections on a fee-for-service basis at a county meeting in 2006.

Action 2: Use the authorities available to the county under M.S. 103B.331.2 that gives counties, with approved water plan the authority, to regulate the use and development of water and related land resources within incorporated areas when county standards are not being met.

Objective 2: Establish and maintain stream and field vegetative buffers in accordance with existing County Zoning Ordinance which improve water quality.

Action 1: Year 1 - Inventory County to determine ordinance compliance with permanent vegetation/conservation plan requirements within shoreland and bluff impact zones and steep slopes using GIS technology.

Action 2: Year 2 - Conduct an educational/informational effort to inform all County citizens of County Zoning Ordinance requirements for permanent vegetation. (Run column in newspaper once a year to get citizens aware of meeting/information.)

Action 2b: Promote CCRP and CREP financial assistance programs to increase the use of buffers. (Conservation Tech.)

Action 3: Year 3 – County Staff contact at least 40 landowners per year that have been determined to be substantially out of compliance with the County Zoning Ordinance and offer technical assistance/existing program availability to rectify issues.

Action 4: Year 4 through 5 – bring high priority lands into compliance with County Zoning Ordinance through stepped-up enforcement, first in the Cannon River Watershed, then Zumbro River Watershed and then the Vermilion and Lake Pepin/Mississippi River Watersheds.

Action 5: Create and install informational signage (1 site per year) on stream bank erosion issues at water access points along the Mississippi River.

Objective 3: Encourage long-term maintenance on detention basins in urban, suburban and highway settings to reduce sedimentation in local streams and water bodies by 10%.

Action 1: Provide technical assistance and identify cost share opportunities for various types of detention ponds (such as BWSR Special Projects monies).

Action 2: Enforce County permit requirements as they become available.

Action 3: Actively work with MPCA on Storm Water Phase II requirements to ensure Goodhue County's presence in the program.
Action 4: Inspect 10 existing detention basins per year to assure functional performance.
Action 5: Support County Subdivision ordinance revisions once adopted (2005).

Objective 4: Increase permanent vegetation (native vegetation where possible) in the attempt to hold soil and water on the land as long as possible.

Action 1: Promote/establish grazing and cover crops practices on agricultural lands.

- Promote cover crops on canning and silage fields for 20 farmers per year.

Action 2: Promote/establish woodlots/forests on 5% of marginal agricultural lands.
Action 3: Restore 10 acres of drained/degraded wetlands per year.
Action 4: Partner with Pheasants Forever/non-profit organizations to support landowners that want to establish prairies when they are requested.
Action 5: Work with the Goodhue County Public Works in establishing prairies on a total of 20 acres of public lands and harvest native seeds for low-cost distribution.

Objective 5: Provide information and technical or financial assistance to county landowners implementing agricultural best management practices (BMPs) on working lands to reduce flooding, soil erosion, protect stream banks and improve water resources.

Action 1: Actively promote and market federal/state/local conservation programs to targeted landowners and help prepare them for eligibility in programs such as: the Conservation Security Program and EQIP practices. Hold 2 CSP informative sessions per year prior to watershed eligibility.
Action 2: Assist 20 landowners per year in establishing and demonstrating conservation tillage methods that are cost-effective and environmentally friendly, especially in areas where hay production has decreased and corn and soybean rotations have increased.
Action 3: Continue educational activities to encourage landowners to adopt conservation tillage and no-till practices on 15 farming operations:

- Utilize tillage transects results each year to target high risk areas

Action 4: Provide leadership and staff time to market and implement CREP, and other long-term easements on 10% of targeted marginal ag lands, per year, that have been identified by local/regional priority efforts.

Objective 6: Preserve, enhance and increase wetland resources in the Cannon River and Zumbro River Watersheds.

Action 1: Complete a drained wetland inventory of the entire county and identify high priority areas for wetland restoration and enhancement.
Action 2: Promote and market wetland preservation and restoration programs, such as RIM, CREP CCRP, WPAs and Wetland Banking, on the high priority wetland areas, to at least 10 landowners per year.
Action 3: Adopt and implement the Wetland Preservation Areas Program, through the MN Wetland Conservation Act, and educated 10 landowners each year on the tax benefits of preserving wetlands and restoring wetlands that have been degraded, drained or filled.

Nutrient and Pest Management

Objective 1: Assist rural and urban landowners in adopting comprehensive nutrient management practices on their lands.

Action 1: Educate and inform 20 landowners per year in water quality sensitive areas about the benefits of environmental friendly and economically sound nutrient and pest management practices by holding an informative session or one-on-one discussions with landowners.

Action 2: Promote and market conservation programs that provide cost-share and assistance to 10 per year landowners for the adoption of comprehensive nutrient management practices.

Action 3: Continue ground water testing on wells and establish base line monitoring of surface water quality for the entire county.

Action 4: Educate and assist 10 feedlot producers regarding the need to keep manure application records. Good application records are the basis from which sound, useable nutrient management plans are developed. Provide 15 manure spreader calibrations each year.

Action 5: Provide training to 10 feedlot operators on writing and maintaining Nutrient Management Plans. Including, but not limited to, education on soil and manure testing and application rates.

Action 6: Promote responsible management of manure and commercial fertilizer application as well as proper use of pesticides by increasing the development and implementation of Comprehensive Nutrient Management Plans. Provide information to at least 15 farmers on the positive and negative effects of commercial fertilizer.

Objective 2: Provide data layer in GIS format to local governmental units with jurisdiction over nutrient management.

Action 1: Provide nitrate probability, surface and ground water sensitivity maps to aid in local zoning decisions when necessary.

Action 2: Map 10 manure application sites per year in GIS format to prevent duplication of manure application acres and also to provide applicators with visual aids when applying manure in and around sensitive land features.

Action 3: Map feedlots and manure application areas, near one city per year, in relation to Drinking Water Management Supply Areas DWMSA, Waters of the State, Shore land, Riparian, Karst, Decorah edge, impaired watersheds. Use this information to target workload, zoning decisions, compliance inspections and feedlot owner assistance.

Feedlots

Objective 1: Prevent runoff from feedlots. This is watershed specific and should target priority areas such as; impaired watersheds, shoreland, karst and riparian areas.

Action 1: Educate 20 feedlot owners per year on MN 7020 feedlot rules and county feedlot ordinances.
Action 2: Create a resource book (web-based) on potential feedlot fix options with visual aids and make it available to all feedlot owners.
Action 3: Provide 15 feedlot owners with the opportunity of touring the latest feedlot BMP's in the county once a year.

Objective 2: Provide financial assistance to achieve feedlot compliance.

Action 1: Be the one-stop informational and signup clearinghouse for all government related financial assistance programs for feedlot fixes;

- Coordinate with NRCS for all USDA financial assistance programs for feedlot fixes, including EQIP and CSP.
- SWCD to coordinate all state cost share programs (including Feedlot Water Quality Management grants and State Cost Share program) that provide cost share assistance for fixing feedlot runoff concerns.

Action 2: Solicit funding and assistance for 10 low cost feedlot fixes per year that achieve the Open Lot Agreement partial fix requirements. Set up this program so that engineering approval is not required for practice implementation.

Objective 3: Provide technical assistance to all farmers. (Not just those receiving program financial assistance.)

Action 1: Hire a technician to evaluate and design 5 feedlot fixes per year.
Action 2: Provide engineering approval for practices when needed.
Action 3: Visit 10% of all feedlots once a year on a regular schedule with technical advice on what is not up to code and suggest alternatives.
Action 4: Maintain list of technical assistance providers for Goodhue County.
Action 5: Promote the use of self certification & assessment programs developed by producer groups in conjunction with government agencies to assess 10 feedlots per year.

Objective 4: Provide adequate staffing to assist in achieving feedlot compliance.

Action 1: Appoint 1 full time equivalent position per 500 feedlots in the county (recommended by MPCA) to provide assistance promoting the open lot agreement, overseeing feedlot construction permits and compliance inspections.

Landuse and Natural Areas

Objective 1: Protect/preserve blufflands and streams through ordinance enforcement and education.

Action 1: Support ordinance revisions and adoptions that are in line with the County Comprehensive Plan.

Action 2: Year 1 - Provide at least one educational workshop and/or one-on-one discussions on new ordinance requirements and why they are important to the County.

Action 3: Years 2 – 5 Enforce ordinance requirements where standards are not being met.

Objective 2: Develop ground water protection guidelines for areas vulnerable to pollution in order to ensure that surface water entering aquifers via sinkholes, infiltration, or subsurface streams is of high quality.

Action 1: Develop and distribute an informational brochure on groundwater protection guidelines which will consist of:

- Utilization of, but not limited to, the Geologic Atlas, NRI and the County Biological Survey to identify pollution vulnerable areas and provide BMP's options where needed.

Objective 3: Encourage natural areas/corridor management in development plans and improve water quality.

Action 1: Preserve natural resources and critical areas that the county values and wants to protect where desired by meeting with department heads regarding specific sites.

Action 2: Develop countywide guidelines for protecting these areas from land uses that could adversely affect water quality and degrade trout streams.

Action 3: Work with partners to implement sound land use decisions:

- Add the SWCD to the County's building permit routing process to evaluate a given project's impacts which consider, the NRI, Geologic Atlas, the County Biological Survey tools and other appropriate management tools.

Action 4: Encourage the enhancement of all natural riparian corridors by emphasizing the public/private benefits of enhancing the functions and values of these natural areas. Publish a letter and/or meet one-on-one with 20 landowners per year on the benefits and values of riparian corridors.

Implementation Schedule					
Erosion Control and Stormwater Quality and Quantity					
		AGENCY	**COSTS**	**EXISTING/POTENTIAL FUND SOURCE**	**DURATION**
Objective 1					
Actions	**1**	SWCD	$2,000/yr	Staff time, Local	ongoing
	2	SWCD	$500/yr	Staff time, Local	2005-2010
Objective 2					
Actions	**1**	GIS, Water Planner, SWCD	$10,000	Staff time, In-Kind	2005-2006
	2	Zoning, SWCD, NRCS	$8,000	Staff time,In-Kind	2006-2007
	2b	SWCD	$5,000/yr	Staff time	Ongoing
	3	SWCD, Landuse	$3,000	In-kind, Staff time	2007-2008
	4	Landuse	N/A		2008-2009
	5	SWCD, DNR, Watershed Org.	$500/yr	Staff time, In-Kind	2005-2010
Objective 3					
Actions	**1**	SWCD, Co. Public Works	$3,000/yr	Staff time, BWSR special project monies	2005-2010
	2	Landuse, SWCD	$1,500/yr	Staff time	ongoing
	3	SWCD, Landuse, Cities	$1,000/yr	Staff time	ongoing
	4	SWCD, NRCS	N/A	319 Grant, Local	2005-2009
	5	Water Plan	$1,000	Staff time, In-Kind	2005-2010
Objective 4					
Actions	**1**	SWCD, NRCS, FSA, Watershed org.	$20,000/yr	Grants, CREP,EQIP, CRP, CCRP where possible	2006-2010
	2	SWCD, NRCS, FSA, MnDNR	$15,000/yr	Grants, CREP,EQIP, CRP, CCRP where possible	2006-2010
	3	WCA, NRCS, SWCD	N/A	Grants, CREP,EQIP, CRP, CCRP where possible	ongoing
	4	SWCD	$5,000/yr	Private monies, staff time, grants	ongoing
	5	Water Plan, SWCD, Co. Public Works	$5,000/yr	MnDOT, Staff time, grants	2006-2008
Objective 5					
Actions	**1**	NRCS, SWCD	$5,000/yr	Staff time, In-Kind	2005-2010
	2	SWCD, NRCS, MES	$2,500/yr	Staff time, In-Kind	ongoing
	3	NRCS, SWCD	$1,000/yr	Staff time, In-Kind, ed grants	ongoing
	4	SWCD	$1,000/yr	Staff time, In-Kind	ongoing
Objective 6					
Actions	**1**	WCA, SWCD, GIS	$5,000/yr	Staff time, In-Kind	2006-2010
	2	SWCD, NRCS	$1,000/yr	Staff time	ongoing
	3	SWCD	N/A	staff time, State Tax Credits	2005-2010

Implementation Schedule					
Nutrient and Pest Management					
		AGENCY	**COSTS**	**EXISTING/POTENTIAL FUND SOURCE**	**DURATION**
Objective 1					
Actions	**1**	NRCS, SWCD, MES	$1,500/yr	staff time, grant through ext.	ongoing
	2	NRCS, SWCD	$1,500/yr	staff time	ongoing
	3	SWCD, Env. Health, Watershed Dist	$10,000/yr	staff time, grant	2006-2010
	4	SWCD, NRCS, MES	$4,000/yr	Staff time, In-Kind	ongoing
	5	SWCD, NRCS, MES	$1,500/yr	Staff time	2005-2010
	6	SWCD, NRCS, MES	$2,000/yr	Staff time	ongoing
Objective 2					
Actions	**1**	SWCD	$500/yr	Staff time, In-Kind	2005-2010
	2	GIS, SWCD	$1,500/yr	Staff time, In-Kind	ongoing
	3	GIS, SWCD	$3,000/yr	In-Kind, Staff time	2005-2010

Implementation Schedule					
Feedlots					
		AGENCY	**COSTS**	**EXISTING/POTENTIAL FUND SOURCE**	**DURATION**
Objective 1					
Actions	**1**	SWCD, Landuse, MES	$1,500/yr	Staff time, In-Kind	ongoing
	2	SWCD	$4,000/yr	Staff time	2005-2007
	3	SWCD, NRCS, MES	$1,500/yr	Staff time	ongoing
Objective 2					
Actions	**1**	SWCD, NRCS	$10,000/yr	Cost Share, In-kind, staff time	2005-2010
	2	SWCD, NRCS, RC&D	$10,000/yr	Grants, Staff time	ongoing
Objective 3					
Actions	**1**	SWCD	$20000/yr	319 Grant	2005-2010
	2	SWCD, NRCS	$5,000/yr	Staff time,	ongoing
	3	SWCD, Feedlot Officer	$8,000/yr	staff time	ongoing
	4	SWCD	$500/yr	staff time	ongoing
	5	SWCD, NRCS	$500/yr	staff time, EQIP	ongoing
Objective 4					
Actions	**1**	SWCD, Landuse	$50,000/yr	Grants, Staff time	2007-2010

Implementation Schedule					
Landuse and Natural Areas					
		AGENCY	**COSTS**	**EXISTING/POTENTIAL FUND SOURCE**	**DURATION**
Objective 1					
Actions	**1**	Bluff Ordinance, SWCD	$1,000/yr	Staff time, local	ongoing
	2	Open space partnerships, SWCD	$500/yr	Staff time, local	ongoing
	3	Landuse, SWCD	$6,000/yr	Staff time, local	2007-2009
Objective 2					
Actions	**1**	SWCD, Water Planner	$2,000/yr	Local, Staff time	2005-2006
Objective 3					
Actions	**1**	SWCD. Lanuse	$500/yr	Staff time, local	ongoing
	2	Landuse SWCD	$1000/yr	Staff time, local	ongoing
	3	Landuse SWCD	$5000/yr	Staff time, local	2005-2010
	4	Landuse SWCD	N/a	319 Grant	

Ongoing Activities in Goodhue County

The Priority Concern Scoping Document contained a portion relating to the concerns that were not directly addressed in this update of the plan. This section contains concerns which are currently being addressed by a variety of programs and are ongoing. Thus, as a committee, we decided that including these concerns would be repetitive. However we feel that these concerns still need to be mentioned in this portion of the plan. This ongoing programs and practices section will inform the reader of current activities which relate to water resources in Goodhue County.

USDA Wetland Regulations (Swampbusters)

This wetland provision of the Farm Bill requires agricultural producers to protect and maintain wetlands on their property in order to be eligible for USDA Farm Program benefits.

WCA

The Wetland Conservation Act of 1991 states that a "no net loss" of drained, filled or excavated wetlands shall occur without a replaced/restored wetland to replace them. The replaced/restored wetland should be of equal or greater size and quality. Wetlands that are not covered by the DNR are the jurisdiction of WCA. The Local Government Unit (LGU) issues exemptions, no-loss or replacement plan determinations for drainage excavation or filling activities in wetlands.

DNR Waters Permits

The DNR can also administer WCA in certain instances. DNR does have public waters permits that cover a wide range of activities in when working with lakes, stream, and wetlands. During their permit process, the SWCD is often asked to review and comment on specific projects.

NPDES

The National Pollution Discharge Elimination System is a national program which is designed to reduce sediment and pollution that enters surface and groundwater during and after construction projects. Construction activities which disturb one or more acres of land, a NPDES permit is required. This permit requires proper erosion control practices to be installed. This is the same program which regulates amounts of pollution that wastewater treatment facilities and other industries can release into the atmosphere and water.

Feedlots

MN Rules 7020 were revised and adopted by the state in 2000. Goodhue County became a delegated county in the MPCA's feedlot program January 1, 2001. The delegation agreement between the County and MPCA provides Goodhue County with the authority to register all feedlot and manure storage areas within the county, distribute and review feedlot or manure storage permit applications, issue construction short form or interim permits, inspect all feedlot and manure storage areas, and review and process complaints. Goodhue County has over 1000 feedlot sites ten animal units or more registered. Of these 1000+ sites over 900 feedlot sites, qualify for Minnesota's open-lot agreement, which provides smaller farms, extended compliance schedules for water quality. With the use of open-lot agreements, on site farm inspections and permits the feedlot office is working towards better water quality.

MEPA
The Minnesota Environmental Policy Act is a state law passed in 1973 which aims to prevent and eliminate damage to the environment as a whole. Environmental Impact Statements (EIS) and Environmental Assessment Worksheets (EWA) may be requested by a petition from an interested group under this act.

RUSLE
The Revised Universal Soil Loss Equation is a tool developed by the USDA which is used as an estimate for soil loss. Variables such as cover and soil types are a function of its equation. Goodhue County currently has a soil loss ordinance being practiced.

CRP
Goodhue County as of January 1st 2005 has a total of 9313.9 acres enrolled in the Conservation Reserve Program and Continuous CRP (CCRP). New enrollment and resigning of this conservation program continue in Goodhue County.

Public/Private Wells
As a goal of the 1997 revised water plan, water test kits are currently being provided for pregnant women and newborns for a reduced rate. These test kits are sent to a certified lab to measure levels of nitrates and coliform bacteria in drinking water sources. These kits are available at Goodhue County Public Health Department and the SWCD office. Hospitals and Women with Infant Children (WIC) should direct pregnant women to either of these offices to purchase the kits at a reduced rate. Every year for the past 7 years a free nitrate testing station was held at the Goodhue County Fair. County citizens are able to bring samples of their drinking water in to get tested at the fair free of charge. The sample location is recorded along with the nitrate level. Samples can either come from private wells or community wells, which are generally regulated by a community provider.

Wellhead Protection
Communities that provide safe drinking water to the public should have some sort of wellhead protection plan established. Basically a wellhead protection area is an area surrounding a well where water is captured and recharges the drinking water supply. This area should be delineated and boundaries clearly labeled. Managing land use in this area can have a major influence on a communities drinking water supply in the future. Currently Cannon Falls, Pine Island and Red Wing have a plan or are currently going through the process of developing one. The process of developing a wellhead protection plan needs to be a coordinated effort between; the community where the plan is located, local unit of government, Goodhue County Public Health and the Minnesota Department of Health.

TMDL
The Minnesota Pollution Control Agency (MPCA), through the Clean Water Act, is the lead agency for conducting the Total Maximum Daily Load (TMDL) studies in the state of Minnesota. TMDL studies can show the source of a particular pollutant and how much a water body can handle of that pollutant (load) without having a negative effect on water quality. TMDL studies have been done and will continue in the future. For instance, Lake Pepin TMDL study is in its beginning stages as are portions of the Cannon River. A list of the MPCA timeline of TMDL studies is included in the appendix.

Sewage and Wastewater Treatment Plants

Goodhue County supports the Southeast Minnesota Wastewater Initiative (SEMNWI) in a regional effort to achieve septic tank compliance. SEMNWI received a 319 grant of $530,000 to educate local officials and the public about health and water quality effects of untreated sewage and septic systems. The Cannon River Watershed Partnership is heading a campaign to promote upkeep and replacement of failing septics that pose a health risk. The goal is a sustainable increase from the 2002 estimate of 300 repairs per year to 550 per year by the third year of the project. The Goodhue County Public Health Department has numerous brochures, pamphlets and folders on the operations and maintenance of septic systems. Once a year, the SWCD and the Public Health office will run a column in a newspaper to remind septic owners to check/maintain/pump their systems.

Solid Waste Management

The Goodhue County Solid Waste Management Department is taking actions to protect the surface and ground water resources of the County. This department is the driving force of the County's recycling efforts. Household Hazardous Waste Collection days are typically held in the spring and summer months throughout the County. On these collection days, people can bring their old, unused or unwanted paints, pesticides and anything from their homes with a hazard warning label. The Department also coordinates a series of Clean-up days where people can bring their old appliances, batteries, furniture, computers etc. in for proper disposal. The Solid Waste Department also regulates all waste management facilities in Goodhue County as well as licensing waste haulers, underground tanks conditions, and landfills. These restrictions help the overall quality of surface water and groundwater by managing soil contamination.

Floodplain and Shoreland Management

Floodplain and Shoreland Management is a program through the DNR and administered by the LGU. The overall goal of the program is to preserve and enhance the quality of surface waters, preserve the economic values of shoreland properties and ensure the sustainable use of water and related resources. Under this program restrictions and management guides are followed when a development is in the vicinity of surface water. These guidelines focus on the realization on the value of shoreland areas, and applying best management practices when construction work is needed.